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Claims

[c1] An apparatus for trimming scrap from an aluminum sheet metal blank comprising:
a clamping base comprising:
a clamping base upper surface;
a clamping base bottom surface; and
a clamping base engagement surface positioned between said clamping base upper surface and said clamping base bottom surface, said clamping base engagement surface comprising:
a clamping base vertically orientated portion perpendicular to said clamping base upper surface; and
a clamping base angled portion intersecting said clamping base upper surface at an obtuse intersection angle;
a steady blade mounted to said clamping base, said steady blade comprising:
a steady blade mounting surface coincident with said clamping base vertically orientated portion;
a vertically orientated steady blade blade-side surface; and
a steady blade engagement surface angled to be substantially coplanar with said clamping base angled portion such that said steady blade and said clamping base

form a contiguous angled engagement surface, said steady blade engagement surface intersecting said vertically orientated steady blade blade-side surface to form a steady blade trimming edge;

an elastic scrap support comprising a support upper surface parallel and contiguous with said contiguous angled engagement surface;

an upper clamping element comprising an upper clamping engagement surface parallel with said contiguous angled engagement surface, said upper clamping engagement surface positioned to engage an aluminum blank positioned between said upper clamping element and said contiguous angled engagement surface, said upper clamping element positioned such that said upper clamping engagement surface is positioned partly over said clamping base angled portion and partially over said steady blade engagement surface;

a moving blade movable past said steady blade for trimming said aluminum blank, said moving blade comprising:

a moving blade blade-side surface parallel to said steady blade blade-side surface,

a moving blade engagement surface generally parallel with the contiguous angled engagement surface, and

a moving blade trimming edge formed by the intersection of said moving blade blade-side surface and said

moving blade engagement surface, said moving blade engagement surface distributing strain on said aluminum blank as said moving blade trimming edge separates a scrap element from said aluminum blank.

[c2] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, further comprising:
a stop surface having a first stop surface generally parallel to said clamping base upper surface and a second stop surface generally parallel to said contiguous angled engagement surface, said second stop surface non-contiguous with said contiguous angled engagement surface, said elastic scrap support element mounted on said second stop surface.

[c3] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein an upper clamping element blade-side surface is non-contiguous with said moving blade blade-side surface.

[c4] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein said moving blade separates said scrap from said aluminum blank by moving said scrap vertically while said elastic scrap support and said moving blade engagement surface act in concert to maintain the orientation of said

scrap parallel to said contiguous angled engagement surface.

[c5] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein said moving blade engagement surface exerts a normal force onto said scrap.

[c6] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein said moving blade and said steady blade are removable.

[c7] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein said clamping base comprises:
an upper clamping base including said clamping base angled portion and a portion of said clamping base vertically orientated portion; and
a lower clamping base mounted to said upper clamping base, said lower clamping base including a lower clamping base height, said lower clamping base replaceable such that said lower clamping base height accommodates a variety of scrap widths.

[c8] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, wherein said moving blade trimming edge comprises a curvilinear

cutting edge.

[c9] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, further comprising:
a notch formed in said steady blade trimming edge.

[c10] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 9, wherein said notch comprises:
a vertical notch surface intersecting said steady blade engagement surface; and
a horizontal notch surface intersecting said steady blade vertical surface.

[c11] OLE_LINK2An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 1, further comprising:
a radius formed on said moving blade trimming edge-OLE_LINK2.

[c12] An apparatus for trimming scrap from an aluminum sheet metal blank comprising:
a clamping base comprising:
a clamping base engagement surface comprising:
a clamping base vertically orientated portion; and
a clamping base angled portion intersecting said clamp-

ing base vertically orientated portion at an obtuse intersection angle;

a steady blade mounted to said clamping base, said steady blade comprising:

a steady blade mounting surface coincident with said clamping base vertically orientated portion;

a vertically orientated steady blade blade-side surface; and

a steady blade engagement surface angled to be substantially coplanar with said clamping base angled portion such that said steady blade and said clamping base angled portion form a contiguous angled engagement surface, said steady blade engagement surface intersecting said vertically orientated steady blade blade-side surface to form a steady blade trimming edge;

an elastic scrap support comprising a support upper surface contiguous with said contiguous angled engagement surface;

an upper clamping element comprising an upper clamping engagement surface parallel with said contiguous angled engagement surface, said upper clamping engagement surface positioned to engage an aluminum blank positioned between said upper clamping element and said contiguous angled engagement surface;

a moving blade movable past said steady blade for trimming said aluminum blank, said moving blade compris-

ing:

a moving blade blade-side surface parallel to said steady blade blade-side surface,

a moving blade engagement surface generally parallel with the contiguous angled engagement surface, and

a moving blade trimming edge formed by the intersection of said moving blade blade-side surface and said moving blade engagement surface, said moving blade engagement surface moving said scrap parallel to said contiguous angled engagement surface as said moving blade trimming edge separates said scrap from said aluminum blank.

[c13] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 12, further comprising:

a stop surface having a first stop upper surface and a second stop upper surface, said second stop surface generally parallel to said contiguous angled engagement surface, said second stop surface non-contiguous with said contiguous angled engagement surface, said elastic scrap support element mounted on said second stop upper surface.

[c14] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 12, wherein said moving blade separates said scrap from said aluminum

blank by moving said scrap vertically while said elastic scrap support and said moving blade engagement surface act in concert to maintain the orientation of said scrap parallel to said contiguous angled engagement surface.

[c15] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 12, wherein said moving blade trimming edge comprises a curvilinear cutting edge.

[c16] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 12, further comprising:
a notch formed in said steady blade trimming edge.

[c17] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 16, wherein said notch comprises:
a vertical notch surface intersecting said steady blade engagement surface; and
a horizontal notch surface intersecting said steady blade vertical surface.

[c18] An apparatus for trimming scrap from an aluminum sheet metal blank as described in claim 12, further comprising:

a radius formed on said moving blade trimming edge.

[c19] A method of trimming scrap from an aluminum sheet metal blank comprising:
placing the aluminum sheet metal blank between a continuous angled engagement surface and an upper clamping engagement surface, said continuous angled surface comprising:
a clamping base; and
a steady blade mounted to said clamping base;
engaging the aluminum sheet metal blank by moving said upper engagement surface towards said continuous angled engagement surface until the aluminum sheet metal blank is secured, said upper clamping engagement surface parallel with said continuous angled engagement surface;
engaging the aluminum sheet metal blank with a moving blade, said moving blade comprising:
a moving blade blade-side surface parallel; and
a moving blade engagement surface generally parallel with said contiguous angled engagement surface; and
a moving blade trimming edge formed by the intersection of said moving blade blade-side edge and said moving blade engagement surface;
moving a moving blade past said steady blade to trim the scrap from the aluminum sheet metal blank;

supporting the scrap utilizing an elastic scrap support, said elastic scrap support comprising a support upper surface contiguous with said contiguous angled engagement surface; and

keeping the scrap parallel to said contiguous angled engagement surface using said moving blade engagement surface.